

Claims

1. An apparatus for receiving a plurality of packets from a video source and for transmitting the plurality of packets to receiving devices, the plurality of packets is
5 associated with one of a plurality of programs, the apparatus for controlling an output rate of the plurality of packets, the apparatus comprising:

a receive processor for receiving the plurality of packets, wherein each packet has a packet identifier;

10 buffers for receiving and buffering the plurality of packets, wherein each packet is provided to one of the buffers according to a specific program;

a packet processor for retrieving each buffered packet from the buffers;

time-sliced queues for queuing the retrieved packet, wherein each retrieved packet is provided to one of the time-sliced queues according to the specific program; and

15 a queue manager for controlling the output of each packet from the time-sliced queues depending upon its egress time, and for providing the packets to the receiving devices,

wherein the queue manager, upon removing a packet from one of the time-sliced queues, notifies the packet processor to retrieve and place a next packet having a common program identifier as the removed packet.

20 2. The apparatus of claim 1, wherein the packet processor receives the program identifier of the removed packet and searches the buffers for a buffered packet having the common program identifier.

25 3. The apparatus of claim 1, wherein when the receive processor receives a packet having a new program identifier that is indicative of a new program, the receive processor provides a new-program signal to the packet processor.

30 4. The apparatus of claim 1, wherein the packet processor retrieves the egress time associated with each packet, and wherein, depending upon the egress time, places the packet into an index in one of the time-sliced queue.

5. The apparatus of claim 4, wherein a null packet is used to maintain flow of each program when there are no packets available in the buffers for that program.

6. A method for controlling an output rate of a plurality of jittered packets in a data stream, the method comprising the steps of:

buffering the plurality of jittered packets, each jittered packet buffered in one of a plurality of buffers according to a specific program;

retrieving each buffered packet from the plurality of buffers depending upon a program identifier identifying the specific program;

queuing the retrieved packets in one of a plurality of time-sliced queues according to the specific program;

removing the queued packets according to an output time associated with the packets and the program identifier,

wherein upon removing a packet, providing a packet-sent signal in order to retrieve a next buffered packet having a common program identifier with the removed packet.

7. The method of claim 6, the steps further comprising:

determining an index into one of the time-sliced queues based on the output time; and

placing a packet descriptor that is indicative of the buffered packet into the determined index.

8. A method for controlling an output time and rate of data packets, the data packets belonging to a plurality of digital data streams in a digital transport system, the method comprising the steps of:

retrieving an appropriate output time for each data packet;

determining an index into one of a plurality of time-sliced queues based on the data packet output time;

placing a packet descriptor that is indicative of the data packet in one of the time-sliced queues based on the index;

removing the packet descriptor from one of the time-sliced queues during a time that matches a time slice in the time-sliced queue in which the packet descriptor was placed; and

transmitting the data packet.

9. The method of claim 8, wherein a new-stream signal is used to trigger a beginning packet flow for a particular stream.

10. The method of claim 8, wherein a packet-sent signal is used to trigger placing a next packet in one of the plurality of time-sliced queues for a particular stream.

11. The method of claim 10, wherein a special null packet is used to maintain flow of a stream during times when no data packets are available in a buffer for that particular stream.

12. The method of claim 8, wherein the data packets are one of an MPEG encoded video, audio, and data packets.